OPERATORS MANUAL

&

WARRANTY FORM

Gavhall Pty Ltd, trading as KANGA FARM EQUIPMENT, would like to thank you for choosing one of our implements. Kanga Farm Equipment has manufactured three point linkage implements to handle the harsh Australian Conditions, since 1982.

All new Kanga Farm Equipment Implements are backed with a 12 month comprehensive warranty, against faulty workmanship and/or materials, under normal working conditions and service, as outline in this manual. Your warranty maybe considered void if any damaged to the implement is caused by operator abuse, neglect, or if any unauthorized modifications have been made.

Kanga Farm Equipment and its Distributors/Dealers are not responsible for any transportation cost incurred in the repair or replacement of parts in either a successful or non-successful warranty claim. All implements must be returned to the manufacture for warranty assessment.

This warranty does not exclude any conditions implied by the Trade Practices Act 1974, or any other relevant legislation.

The information contained in this manual was current at the time of printing and has been compiled especially to assist you with the Implement that you have purchased. It is of the utmost importance that you read this manual and understand the context completely before attempting to operate the implement. Please be aware that in an effort to bring you better products we are always implementing continuous improvements that may change the designs and specifications of the Implement. In doing this, Kanga Farm Equipment together with its Dealers and Distributors are under no obligation to implement these changes, free of charge, on any previously delivered Implement

16 Cahill Street, Dandenong, Victoria, Australia, 3175 Tel: (03) 9706 5166 Fax: (03) 9706 5050

(PROP. GAVHALL PTY LTD)
ACN 006 050 657
ABN 59 918 752 500

TO THE DEALER

Assembly and proper installation of this product is the responsibility of the KANGA FARM EQUIPMENT dealer. The dealer must complete all items on the Warranty Registration & Installation Form included in this manual before releasing the implement to the new owner.

Both dealer and customer must sign the registration, which certifies that all Dealer Checklist items have been completed. The dealer must return a copy of the Warranty Registration & Installation Form to Kanga Farm Equipment. Reminders about Warranty Registration that have not been returned will be sent out to demonstrate that reasonable attempts have been made to ensure dealers complete risk assessment and pre-delivery obligations.

TO THE OWNER

Read this manual before operating your KANGA FARM EQUIPMENT implement. The information presented will prepare you to do a much better and safer job. Keep this manual handy as a reference. Ensure all operators read this manual carefully and become acquainted with all the adjustments and operating procedures before attempting to operate. Keep a record that the operator has read and understands the correct operating procedures as outline in this manual.

The implement you have purchased has been carefully engineered and manufactured to provide dependable and satisfactory use. Like all mechanical products, it will require routine cleaning, upkeep and maintenance. Lubricate the implement as specified. Observe all safety information in this manual and safety decals on the implement.

Throughout this manual the term **IMPORTANT** is used to indicate that a failure to observe can cause damage to the equipment. The terms **CAUTION, WARNING** and **DANGER** are used in conjunction with the Safety-Alert Symbol (triangle with an exclamation mark) to indicate the degree of risk to your personal safety.

This Safety-Alert Symbol indicates a hazard and means ATTENTION! BE CAREFUL! YOUR SAFETY IS INVOLVED!

DANGER indicates an imminently hazardous situation, which if not avoided, will result in death or serious injury.

WARNING indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.

CAUTION indicates a potentially hazardous situation, which if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

GENERAL INFORMATION

The purpose of this manual is to assist you in operating and maintaining your KANGA implement. Read it carefully. It provides information and instructions that will help you achieve years of dependable performance. These instructions have been compiled from extensive field experience and engineering data. Some information may be general in nature due to the unknown and varying operating conditions. However, through experience and these instructions, you should be able to develop procedures suitable to your particular situation.

The illustrations and data used in this manual were current at the time of printing, but in an effort to bring you better products we are always implementing continuous improvements that may vary your implement slightly in detail. We reserve the right to redesign and change the machine as may be necessary without notice.

WARNING

Some illustrations in this manual show the Digger with Safety Shields removed to provide a better view. The Slasher should never be operated with any safety shielding removed.

Throughout this manual, references are made to right and left direction. These are determined by standing behind the equipment facing the direction of forward travel. Blade rotation is as if viewed from the top.

KANGA
FARM EQUIPMENT

Post Hole Diggers

Mini Range
M Range
H Range
XH Range (Hydraulic)

SPECIFICATIONS

MINI RANGE

3 – Point Linkage	Category 1
Boom Material	Rolled Hollow Section (RHS)
Boom Material Measurements	80 x 80 x 4
A Frame Material	65 x 12 Flat
Type of Tower	Double Clevis Reinforced
Gearbox	35hp♦ (2.92:1 ratio)
Tractor PTO Speed	Idle (540 rpm)
Power Take Off Shaft (PTO)	Series 2 (1500mm)
Clutch Size and Type	6" Slip Clutch
# of Clutch Linings	2
Weight (less auger)	92kg
Max. Auger Size	12" (305mm)

M RANGE

3 – Point Linkage	Category 1
Boom Material	Rolled Hollow Section (RHS)
Boom Material Measurements	100 x 100 x 6
A Frame Material	65 x 12 Flat
Type of Tower	Double Clevis Reinforced
Gearbox	50hp♣ (3.18:1 ratio)
Tractor PTO Speed	Idle (540 rpm)
Power Take Off Shaft (PTO)	Series 4 (1500mm)
Clutch Size and Type	6" Slip Clutch
# Of Clutch Linings	2
Weight (less auger)	133.6kg
Max. Auger Size	24" (610mm)

H RANGE

3 – Point Linkage	Category 1
Boom Material	Rolled Hollow Section (RHS)
Boom Material Measurements	100 x 100 x 6
A Frame Material	65 x 12 Flat
Type of Tower	Double Clevis Reinforced
Gearbox	75hp† (4:1 ratio)
Tractor PTO Speed	Idle (540 rpm)
Power Take Off Shaft (PTO)	Series 4 (1500mm)
Clutch Size and Type	8" Slip Clutch
# Of Clutch Linings	2
Weight (less auger)	159.2kg
Max. Auger Size	24" (610mm)

♦ Specifications for this Gearbox can be found on page 23 of this Operators Manual.

♣ Specifications for this Gearbox can be found on page 24 of this Operators Manual.

† Specifications for this Gearbox can be found on page 24 of this Operators Manual.

XH RANGE

3 – Point Linkage	Category 1 or 2
Material	Rolled Hollow Section (RHS)
Construction	Heavy Duty Dual Rail with shear bolts
A Frame Material	Rolled Hollow Section (RHS)
Tractor PTO Speed	Idle (540 rpm)
Hydraulic	2.5" Hydraulic Ram & hoses
Gearbox	**50hp**[♣] (3.18:1 Reduction) **75hp**[†] (4:1 Reduction)
PTO Shaft	50hp Gearbox - Series 4 75hp Gearbox - Series 6
Clutch	Friction Slip Clutch
Size of Clutch	50hp Gearbox - 150mm (6") 75hp Gearbox - 200mm (8")
# of Clutch linings	2
Max. Auger Size	24" (610mm)

AUGERS

Length	1220mm (48")
Flighting Thickness	5mm
Pilot (tip)	Heat Treated Cast Steel, replaceable
Tooth	Nickel Alloy Steel hardened, replaceable
Sizes Available	**(4")** 100mm (13.5kg) **(6")** 150mm (14.5kg) **(9")** 228mm (19.5kg) **(12")** 305mm (24.5kg) **(15")** 380mm (27.2kg) **(18")** 457mm (34.5kg) **(24")** 610mm (60.5kg)

NT - Mini Range Post Hole Digger are limited an a maximum auger size of 305mm (12"). Augers larger than 12" (305mm) should not be attached to a Mini Range Post Hole Digger as they may cause the 35hp gearbox to fail. In the circumstance where a larger auger has been attached to a Mini Range Post Hole Digger and a failure occurs, it is likely that the gearbox will not be covered by warranty.

[♣] Specifications for this Gearbox can be found on page 24 of this Operators Manual.

[†] Specifications for this Gearbox can be found on page 24 of this Operators Manual.

SAFETY RULES & ACCCIDENT PREVENTION

ATTENTION! BE CAREFUL! YOUR SAFETY IS INVOLVED!

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said, ***"The best safety device is an informed careful operator."*** We ask you to be that kind of operator.

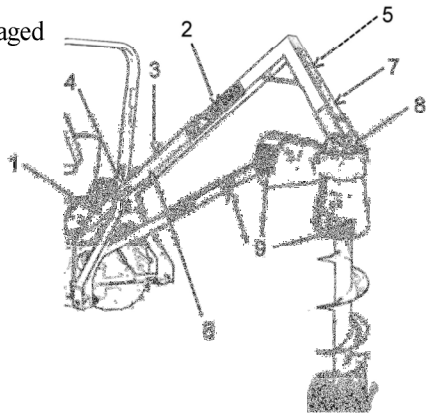
- **Safety instructions are important! Read all attachments and unit manuals; follow all safety rules and safety decal information. Failure to follow instructions can result in serious injury or death.**
- **If you do not understand any part of this manual and need assistance the Department of Agriculture, Occupational Health & Safety Offices, any Agricultural School or college and your local dealer should be able to direct you on where you can received appropriate training. No operator however experienced in farm machinery operation they maybe, should attempt to use any piece of machinery that they have not been competently trained to use.**
- **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid (oil) under pressure can easily penetrate the skin and will cause serious injury or death.**
- **Make sure that all operating and service personnel know that if hydraulic fluid (oil) penetrates the skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury or death will result. CONTACT A PHYSICAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- **Know your controls and how to stop quickly in an emergency.**
- **Operators must be instructed in and be capable of the safe operation of the equipment and all controls. Do not allow anyone to operate this equipment without proper instruction.**
- **Do not allow children or untrained persons to operate equipment.**
- **Check that all hardware is tight and properly installed.**
- **Always wear relatively tight fitted clothing to avoid entanglement in moving parts. Wear heavy-duty, rough-soled boots and protective equipment for eyes, hair, hands, hearing and head.**
- **Ensure implement is properly attached, adjusted and in a good condition so that it can be operate safely.**
- **Make sure all spring activated locking pins or collars on the Power Take Off (PTO) Shaft move freely, are well greased and are firmly seated in the tractor PTO splined angular groove.**
- **Before commencing operation, check all equipment driveline guards for damage and make sure they rotate freely. Replace any damaged guards or guards that do not rotate freely on drivelines.**
- **Tractors MUST be fitted with Roll Over Protection Structure (ROBS) or ROBS Cap. It is also advisable that your tractor be fitted with a seatbelt, where fitted it must be worn at all times. Falling from your tractor can result in death from being run over or crushed. If your tractor is fitted with a folding ROBS, keep it in the "locked up" position at all times.**
- **Inspect chains, shackles, deflectors and any wear parts for damage. Replace if damaged.**
- **Remove any debris that has accumulated on the implement, tractor or engine to avoid fire hazard.**
- **Ensure all safety decals are installed. Replace if damaged.**
- **Ensure shields and guards are properly installed and in good working condition. Replace if damaged.**
- **A minimum 20% of tractor and equipment weight must be on the tractor's front wheels with implement in the transport position. Without this weight, tractor could tip over causing personal injury or death. The weight maybe attained with a loader, front wheel weights, and ballast in the tyres or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the ROPS max ballasted mass certificate. Weight the tractor and implement. Do not estimate.**
- **Inspect operating area, remove where possible any stones or foreign objects that may cause injury or damage. It is very important to always watch for foreign objects in the area you are operating and avoid any that could cause injury or damage.**
- **When working in populated areas always place signs in the area to alert people or vehicles that may pass. Operation must be stopped when anyone comes within 50 meters.**

- **Keep all people and animals away from the implement during start up, operating and when stopping.**
- **Never place hands or any part of your body against auger, gearbox, PTO or boom to aim the auger.**
- **Shift tractor transmission into park or neutral and set park brake before engaging PTO and digging.**
- **Keep digger under control by running PTO at slowest speed possible. No faster than half throttle in 540-rpm range. Always ensure the correct setting of 540 rpm is selected on your tractor before start up.**
- **Use extreme care when working close to fences, ditches, hillsides or other obstacles.**
- **Do not operate or transport on steep slopes. If in doubt set rear axles wider for moderate slopes.**
- **When digging on unstable or hilly terrain, place digger uphill from the tractor.**
- **When dislodging a stuck auger, disengage PTO, stop engine, remove key, disconnect PTO and turn auger in reverse with a wrench. Remove and store wrench and reconnect PTO before starting engine.**
- **Never leave a tractor and implement running unattended.**
- **Do not operate the implement or tractor while under the influence of drugs or alcohol.**
- **Operate only in daylight or good artificial light.**
- **Keep hands, feet, hair, and clothing away from moving parts while engine is running.**
- **For transportation on public roads the operator must ensure that the tractor and implement complies with current State and Federal laws and must strictly adhere to all road traffic regulations in force in his/her particular state.**
- **Always operate equipment from the seat of the tractor with the seat belt securely fastened especially when operating controls or starting engine. Place transmission in neutral, engage break and ensure all other controls are disengaged before starting tractor engine.**
- **Do not operate tractor PTO during transport or when implement is raised more than 150mm above the ground.**
- **Look down and to the rear and make sure area is clear and safe before traveling in reverse.**
- **Do not stop, start or change directions suddenly when traveling on slopes.**
- **Use extreme care and reduce ground speed when traveling on slopes and rough terrain.**
- **Stop implement, then tractor, immediately upon striking an obstruction. Turn off engine, remove key, inspect and repair any damage before resuming operations. Always block implement when inspecting.**
- **Before commencing any adjustment, maintenance, or cleaning. Always disengage the Power Take Off (PTO) Shaft, switch off the tractor engine, remove key and wait until all moving parts have come to a complete stop, then ensure the machine is on the ground or on a robust secure support.**
- **Before dismounting tractor or performing any service or maintenance, disengage power to implement, lower the 3-point linkage and any other raised components (i.e. loader bucket) to the ground. Operate valve levers to release any hydraulic pressure, stop engine, set parking brake, remove key and unfasten seat belt.**
- **Disconnect driveline from the tractor PTO before performing any service work.**
- **Never place any part of the body underneath the implement or between moveable parts even when engine has been turned off. Hydraulic systems can "creep" (i.e. slowly lower). They may fail or movement of the control levers can cause the implement to drop or rotate unexpectedly causing severe injury or death. Follow Operator's Manual instructions for working on your implement or have servicing carried out by a qualified dealer.**
- **During routine checks and/or repairs ensure that no one can switch on the tractor or Implement accidentally. Keep the key to the tractor in your pocket.**
- **For your own safety and that of others and to avoid forfeiting your warranty, use only original spare parts.**
- **Do not modify/alter or permit anyone else to modify/alter the implement or any of its components.**
- **Ensure implement is properly attached, adjusted and in good operating condition.**
- **Frequently check teeth & pilot. They should be sharp, free of nicks and cracks and securely fastened.**
- **Do not handle teeth & pilot with bare hands. Careless or improper handling may result in serious injury.**
- **Your dealer can supply you with genuine replacement parts.**
- **Firmly tighten all nuts, bolts, screws and shackles before operating. If worn or damaged then replace immediately.**
- **Block implements securely for storage.**
- **Keep children and bystanders away from storage area.**
- **Kanga Farm Equipment accepts no responsibility or liability for any losses, injuries or damages that may result from failing to observe these safety rules and the safety decals on the implement.**

SAFETY RULES & ACCCIDENT PREVENTION

ATTENTION! BE CAREFUL! YOUR SAFETY IS INVOLVED!

Replace Immediately if Damaged



Mini Range Post Hole Digger

1 – Serial Number Plate

2 – Kanga Logo

KANGA FARM EQUIPMENT

3 – Model (ie S, M, H, etc)

M-Range

4 – Safety Decal

5 – Safety Decal

6 – Safety Decal K0004 (x2)

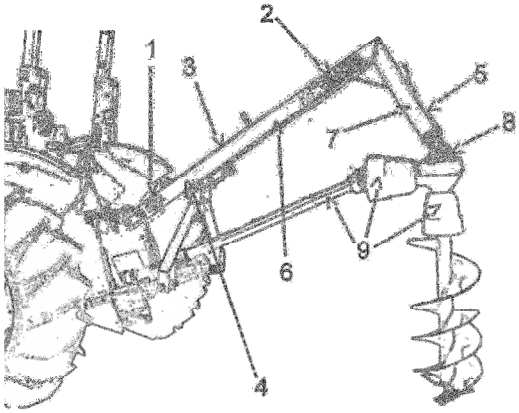
7 – Safety Decal K0006

8 – Safety Decal

9 – PTO Safety Decal (x3)

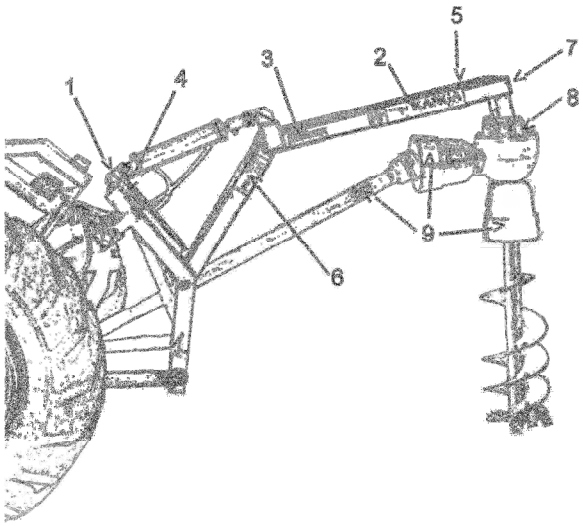
M/H Range Post Hole Digger

Pictured right:



XH Range Post Hole Digger

Pictured below:



OPERATION

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said, ***"The best safety device is an informed careful operator."*** We ask you to be that kind of operator.

The operator is responsible for the safe operation of this implement. The Operator must be properly trained. Operators should be familiar with the implement and tractor and all safety practices before starting operation. Read the safety rules and safety decal information on pages 8, 9 & 10.

Post Hole Diggers are designed for one-man operations. You must always dig holes from sitting in the tractor seat. **It is the responsibility of the operator to see that no one comes within 50 meters of the digger when it is operating.** Accidents have occurred when more than one person is in the immediate area of the operating implement. Be sure no one else is near you when you operate this product.

⚠ DANGER

- **Do not operate this digger unless all shields and guards are properly installed and in good working condition. Replace if damaged.**

⚠ WARNING

- **Never place hands or any part of your body against auger, gearbox, PTO or boom to aim the auger.**
- **Do not shovel dirt away from a running auger. The shovel can be caught and thrown by the auger.**
- **Consult local utilities before digging. Know location and depth of all underground cables, pipelines and other hazards in working area and avoid contact.**
- **When dislodging a stuck auger, disengage PTO, stop engine, remove key, disconnect PTO and turn auger in reverse with a wrench. Remove and store wrench and reconnect PTO before starting engine.**
- **Keep hands, feet, hair and clothing away from equipment while engine is running. Stay clear of all moving parts.**
- **Keep hands and body away from pressurised lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid (oil) under pressure can easily penetrate the skin and will cause serious injury or death. CONTACT A PHYSICAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- **Make sure that all operating and service personnel know that if hydraulic fluid (oil) penetrates the skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury or death will result.**
- **Do not put digger into operation unless auger point and all cutting edges are intact and in good repair.**
- **Do not allow children or untrained persons to operate this implement.**
- **Keep bystanders at least 50 meters from equipment when operating.**
- **Keep all people and animals away from the implement during start up, operating and when stopping.**
- **Make sure all spring activated locking pins or collars on the Power Take Off (PTO) Shaft move freely, are well greased and are firmly seated in the tractor PTO splined angular groove.**
- **When working in highly populated areas always place signs in the area to alert people or vehicles that may be passing.**
- **When digging holes always sit in the tractor/operators seat.**
- **Shift tractor transmission into park or neutral and set park brake before engaging PTO and digging.**
- **Keep digger under control by running PTO at slowest speed possible. No faster than half throttle in 540-rpm range.**

⚠ CAUTION

- **Always wear relatively tight fitted clothing to avoid entanglement in moving parts. Wear heavy-duty, rough-soled boots and protective equipment for eyes, hair, hands, hearing and head.**
- **Check that all hardware is tight and properly installed.**
- **Stop implement, then tractor, immediately upon striking an obstruction. Turn off engine, remove key, inspect and repair any damage before resuming operations.**
- **A minimum 20% of tractor and equipment weight must be on the tractor's front wheels with implement in the transport position. Without this weight, tractor could tip over causing personal injury or death. The weight maybe attained with a loader, front wheel weights, and ballast in the tyres or front tractor weights. When attaining the minimum 20% weight on the front wheels, you must not exceed the ROPS max ballasted mass certificate. Weight the tractor and implement. Do not estimate.**

⚠ IMPORTANT

- **Never exceed the recommended auger capacity of the Post Hole Digger. The Mini Range is designed for use with augers up to 305mm (12"). The H Range is designed for augers up to 610mm (24"). Use of an incorrect auger can cause equipment damage, loss of operator control and personal injury.**

PREPARATION

Before commencing operation thoroughly read and understand your Operator's Manual.
Contact local utility companies to make certain there are no buried gas lines, electricity cables, etc in the area you will be operating. Then clear area of objects that could wrap around the auger or could be thrown by the auger.
Check for ditches, stumps, holes or other obstacles that could cause the tractor to roll.

To dig properly your tractor must be able to raise or lower through the highest and lowest points of the tractors 3-point linkage arm travel without any part of the Post Hole Digger touching against itself or the tractor frame. Check carefully BEFORE attaching the auger. If it does touch, adjust the tractors 3-point linkage and or vary the position of the A Frame in the boom so that all movement is free.

Use stabiliser bars, adjust sway chains or sway blocks on the tractor 3-point linkage to keep the Post Hole Digger from swaying side to side. Adjust as tightly as practical for best performance.

⚠ IMPORTANT

- **Post Hole Digger gearboxes are shipped without lubricant. Fill gearbox with high quality gear oil with a viscosity index of 90W before operation.**
- **If PTO Drive Shaft interferes with drawbar, swing drawbar out of the way or remove.**

OPERATING TECHNIQUE
Mini / M / H Range Post Hole Diggers

⚠ WARNING

- **Never place hands or any part of your body against auger, gearbox, PTO or boom to aim the auger.**
- **Do not shovel dirt away from a running auger. The shovel can be caught and thrown by the auger.**

⚠ IMPORTANT

- **Never use body weight in an attempt to help the auger penetrate the ground.**

1) Position the tractor so that the auger point is placed where the hole is to be dug.
2) Set the tractor's park brake. Shift transmission into park or neutral.
3) Do not allow anyone to stand behind or to the side of a rotating auger. Keep bystanders 10 metres away.
4) Lower auger point slowly to the ground with PTO disengaged.
5) The auger point should be approximately 100mm back of the centre of the gearbox. As the auger works down into the ground it will straighten, due to the pivoting action of the boom in a downward motion. If the auger has side tilt, correct with the tractor's 3-point linkage. NOTE: If the auger tilts too far forward or to the rear it maybe necessary to move the tractor slightly. Move tractor slowly and carefully so you do not bend the auger.
6) With auger point lowered to the ground, set the engine speed to idle, and then engage PTO. Make sure auger point is on the ground before engaging the PTO.

⚠ IMPORTANT

Under no circumstances should the PTO be run at 540 rpm. No faster than half throttle in 540-rpm range.

7) As the auger penetrates the ground, lower the unit slowly with the tractor's 3-point linkage arms. **DO NOT LET THE AUGER SCREW ITSELF INTO THE GROUND.** The auger must be able to dig up the ground and carry it to the top by the auger flighting.
8) Dig the hole in small steps. Dig down only 100 – 150mm then raise the auger up to allow the soil to clear. Repeat this procedure until the desire depth is reached. This gives you better control of the auger and prevents difficulties that could lead to an accident.

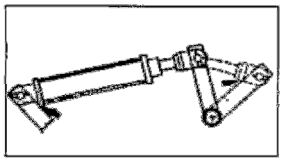
⚠ IMPORTANT

- **Be careful when raising the auger. If you raise the auger as high as the 3-point linkage arms will allow you can put the PTO shaft universal joints at an extreme angle and cause damage to the PTO shaft. It is best to raise the auger just enough to clear the hole when the PTO in engaged.**
- **Ensure that if you are operating the Post Hole Digger at a speed faster than idle, that you reduce the speed back to idle before the auger comes out of the ground.**
- **It is recommended NOT to raise the auger more than 150mm (6") above the ground while the auger is in operation. Do not transport the implement with the PTO Shaft engaged.**

To get a clean hole, it is sometimes better to lower the auger into the hole with the auger rotating and then, when at the desired depth, stop the auger and raise the auger while it is NOT turning. This brings the dirt up leaving only a small amount in the hole.
Disengage the PTO when travelling between holes.
In some types of soil it may be necessary to use the 3-point linkage arms to prevent the auger from screwing itself into the ground too quickly.
When the ground is too hard to penetrate with your cutting edges and points, sharpen or replace them and try again. These are replaceable parts and must be in a good condition to penetrate the ground.
If you are having trouble penetrating the ground, please refer to the "Trouble Shooting" section in this manual for suggestions.

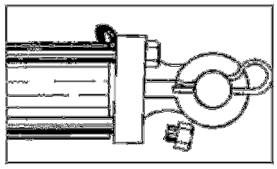
XH Range Hydraulic Post Hole Diggers ONLY.

COMMON CAUSES FOR HYDRAULIC CYLINDER FAILURES



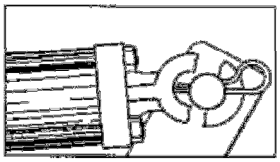
BENT PISTON ROD NORMALLY CAUSED BY:
BINDING IN ANY DIRECTION.

This could have been avoided by taking the simple precaution of checking bracket clearances BEFORE—DURING—AFTER the cylinder was extended, and before using the cylinder under pressure.



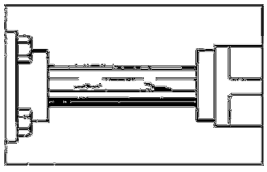
STRETCHED TIE RODS BLOWN BODY SEAL
NORMALLY CAUSED BY: TOO MUCH PRESSURE.

Extruded static seal and possibly broken or stretched tie rods. To avoid this trouble check pressure rating of the cylinder against the pump pressure rating of the tractor, the cylinder is to be used on or with.



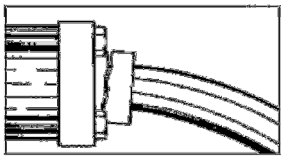
BROKEN CLEVIS ENDS NORMALLY CAUSED BY:
IMPROPER CLEARANCE IN THE MOUNTING BRACKETS.

Clevis castings can be broken if clearances are not adequate to allow free movement of the cylinder when fully extended. Hydraulic cylinders exert a tremendous amount of force and if retarded before they reach the end of the stroke something has to give, often the clevis casting.



ROUGH OR SCORED ROD.

Tie rod cylinder rods are hard chrome plated and welded cylinders are chrome steel. They can be marked or scored. Protect the rods at all times and be sure that nothing hits or rubs it when it is extended. Rough places on the rod damages the seals and reduces their normal life, resulting in the necessity for frequent replacement.



BROKEN HEAD CASTING NORMALLY CAUSED BY:
BENT PISTON ROD.

In case a rod becomes bent DO NOT attempt to pull the cylinder closed. To do so will almost invariably cause the head casting to crack or break.

1) Position the tractor so that the auger point is placed where the hole is to be dug.
2) Set the tractor's park brake. Shift transmission into park or neutral.
3) Do not allow anyone to stand behind or to the side of a rotating auger. Keep bystanders 10 meters away.
4) Lower auger point slowly to the ground using the Hydraulic Ram only, with PTO disengaged.
5) The auger point should be approximately 100mm back of the centre of the gearbox. As the auger works down into the ground it will straighten, due to the pivoting action of the boom in a downward motion. If the auger has side tilt, correct with the tractor's 3-point linkage. NOTE: If the auger tilts too far forward or to the rear it maybe necessary to move the tractor slightly. Move tractor slowly and carefully so you do not bend the auger.
6) With auger point lowered to the ground, set the engine speed to idle, then engage PTO. Make sure auger point is on the ground before engaging the PTO.

⚠ IMPORTANT

Under no circumstances should the PTO be run at full throttle in 540 rpm. No faster that half throttle in 540-rpm range.

7) As the auger penetrates the ground, lower the unit slowly with the Hydraulic Ram. **DO NOT LET THE AUGER SCREW ITSELF INTO THE GROUND.** The auger must be able to dig up the ground and carry it to the top by the auger flighting.
8) Dig the hole in small steps. Dig down only 180 – 200mm at a time, then raise the auger up to allow the soil to clear. Repeat this procedure until the desire depth is reached. This allows better control of the auger and prevents difficulties that could lead to an accident.

TRANSPORT

⚠ WARNING

- **Do not operate on steep slopes, if in doubt set rear axles wider or only operate on moderate slopes.**
- **Do not stop, start or change directions suddenly on slopes and traveling straight up and down is recommended.**
- **Use extreme care and reduce ground speed on slopes and rough terrain.**
- **Watch for hidden hazards on the terrain when traveling to where you will be operating.**

The Post Hole Digger auger is free swinging and care should be taken while transporting the implement.
Be sure auger is completely retracted from the hole before attempting to move the tractor.
DO NOT transport the Post Hole Digger while the PTO is engaged as this could cause the universal joints, of the PTO, to operate on an extreme angle and cause the failure of the drive shaft.
Pay close attention to the Safety Messages regarding transportation of this implement. Avoid unnecessary injuries and equipment damage by exercising cautious, conscientious travel procedures.
Attaching the implement to the tractor increases the overall length of the working unit. Allow additional clearance for the implement to swing when turning.
Raise the implement as high as possible for transporting.

DISLODGING A STUCK AUGER

⚠ WARNING

- **When dislodging a stuck auger, disengage PTO, stop engine, remove key, disconnect PTO and turn auger in reverse with a wrench. Remove and store wrench and reconnect PTO before starting engine.**
- **Removing a lodged auger can be dangerous work. Be careful.**

1) If the auger gets stuck in wet clay, stones or roots disengage the PTO immediately and turn off the tractor engine.
2) Turn the auger backwards several turns with a large pipe wrench. Than attempt to raise the auger with the 3-poit linkage arms. Extreme rocking or lifting loads while trying to clear the auger can cause auger, gearbox or boom failure. NOTE: Do not attempt to raise the auger while turn it with the wrench or with a wrench attached to the auger. You could be injured if the PTO was accidentally engaged or if the 3-point linkage arms suddenly raise the auger.
3) Remove and store wrench before starting engine.

Daily Pre-Operation Checklist

(Operators Responsibility)

- □ Review and follow safety rules outlined in this manual.
- □ Check that all safety decals are installed and in good condition. Replace in damaged.
- □ Check that all shielding and guards are properly installed and in good condition. Replace if damaged.
- □ Consult local utilities before digging. Know location and depth of all underground cables, pipelines, overhead wires and other hazards in working area and avoid contact.
- □ Check that implement is properly and securely attached to the tractor.
- □ Check that auger point and all cutting teeth are intact and in good condition.
- □ Make sure PTO spring activated locking pin is well greased, sides freely and is firmly seated in angular grooves.
- □ Set tractor PTO at 540 rpm remembering only to operate at idle.
- □ Lubricate all grease fitting locations. Make sure PTO joints and shaft is well lubricated.
- □ Check oil level in the gearbox.
- □ Check all hardware (i.e. bolts, nuts, shackles, chains, etc.) are properly installed, secured and in good condition.
- □ Make sure tractor 3-point linkage arms are adjusted so that implement cannot be lift to a point that there are extreme angles on the PTO shaft universals.
- □ Set friction clutch as outline in "Owner Service" section of this manual.
- □ Ensure tractor PTO and transmissions are in neutral before starting engine.
- □ Inspect area that you will be operating in and remove any object that may cause injury or damage.

OWNER SERVICE

Safety is a primary concern in the design and manufacture of our products. Unfortunately, our efforts to provide safe equipment can be wiped out by a single careless act of an operator.

In addition to the design and configuration of equipment, hazard control and accident prevention are dependent upon the awareness, concern, prudence and proper training of personnel involved in the operation, transport, maintenance and storage of equipment.

It has been said, ***"The best safety device is an informed careful operator."*** We ask you to be that kind of operator.

The information in this section is written for operators who possess basic mechanical skills. Should you need help, your dealer has trained service technicians available. For your protection, read and follow safety information in this manual.

⚠ WARNING

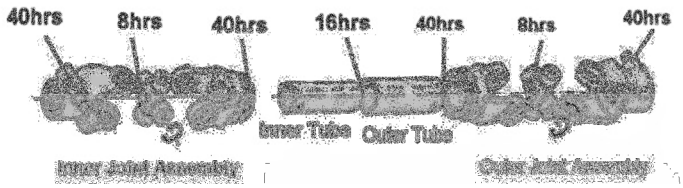
- **Disengaged tractor PTO and wait for all moving parts to come to a complete stop. Lower implement to the ground or block with secure robust support. Turn tractor engine off, remove key and disconnect PTO Shaft from the tractor before performing any service or maintenance.**
- **Keep all persons away from operator control area while performing adjustments, service or maintenance.**
- **Never go underneath implements that are lowered to the ground or raised, unless it is properly blocked and secure. Never place any part of the body underneath the implement or between moveable parts even when engine has been turned off. Hydraulic systems can "creep" (i.e. slowly lower). They can fail or movement of the control levers can cause the implement to drop or rotate unexpectedly causing severe injury or death. Follow Operator's Manual instructions for working on your implement, correct blocking procedures or have work carried out by a qualified dealer.**
- **Keep hands, feet, hair and clothing away from equipment. Stay clear of all moving parts.**
- **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid (oil) under pressure can easily penetrate the skin and will cause serious injury or death. CONTACT A PHYSICAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- **Make sure that all operating and service personnel know that if hydraulic fluid (oil) penetrates the skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury or death will result.**
- **Always wear relatively tight fitted clothing to avoid entanglement in moving parts. Wear heavy-duty, rough-soled boots and protective equipment for eyes, hair, hands, hearing and head.**

ROUTINE MAINTENANCE

1) Check that all bolts, nuts and screws are tight.
2) Check the level of the gearbox♦ oil daily and top-up to correct level. Check for gearbox leaks. It should be noted that there is no warranty on a gearbox that has been operated without oil.
3) Grease the PTO Shaft at the regular intervals specified in the "Lubrication" section of this manual.
4) Check the wear to the auger pilot and teeth. Sharpen routinely with grinder or replace when too far worn. It is advisable to carry spare teeth and pilots.

Lubrication Information

Do not let excess grease collect on or around parts, particularly when operating in sand conditions.
The figure below show the lubrication points and gives the frequency of lubrication in normal operating hours based on normal operating conditions. Severe or unusual conditions may require more frequent lubrication.



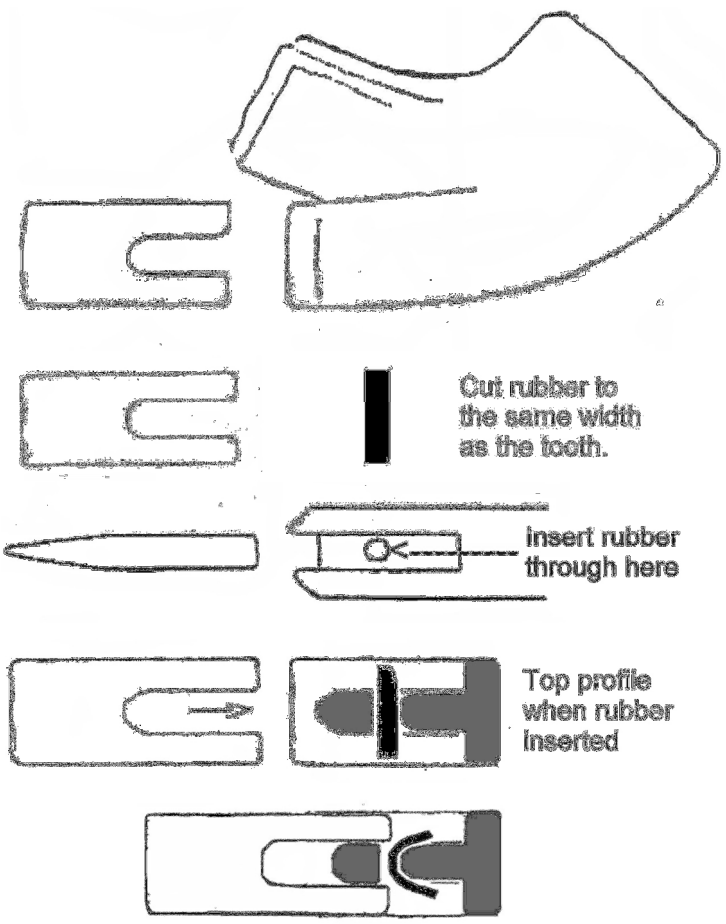
When greasing implement, be sure to clean fittings thoroughly before attaching grease gun. Kanga Farm Equipment recommends Lithium Grease of #2 consistency for all locations, unless otherwise noted.
Kanga Farm Equipment, in conjunction with the gearbox manufacturer recommends high quality gear oil with a viscosity index of 80W or 90W. Fill gearbox until oil runs out the side plug on the gearbox. Check gearbox daily for evidence of leakage. Have your dealer assist you should you find evidence of leakage.
Lubricate the PTO universal joint every eight operating hours. Failure to maintain proper lubrication could result in damage to Universal Joints, gearbox and driveline.
To lubricate the shaft itself, lower implement to the ground, disconnect PTO Shaft from tractor and slide the PTO halves out until almost disconnected from each other. Apply a bead of grease completely around male half where it meets the female half. Slide over each other several times repeatedly to distribute grease.

STORAGE

Post Hole Diggers, once off the tractor, can be an awkward piece of equipment to handle. Be careful not to pinch hands and fingers in the various hinge points of the digger.
If possible, hang the digger from an overhead rafter or beam. Attach some heavy-duty chain or rope around the boom just in front of the gearbox. This will allow one person to easily reconnect the digger to the tractor when it is next required.
If storing outside, another idea is to dig a hole about 300 – 450mm deep. Then shut the PTO off while the auger is in the hole. Set park brake, turn off engine then disconnect the PTO and the digger from the tractor. The auger in the hole will keep the unit upright and make it possible for one man to disconnect or reconnect the digger to the tractor. This method of storage will cause rusting to the auger but it is easy for one man to handle the unit. If possible remove the PTO shaft completely and store undercover.
If the digger has been stored for a long time in either of the above mentioned methods or another way it is highly recommend that before use the following is carried out:
1) Drain and change the oil in the gearbox and refill to the correct level
2) Check and replace where necessary, pilots, teeth, nuts and bolts
3) Clean machine and remove any rust that may have appeared.
4) Replace any safety decals that may be damaged or painted over.
5) Make sure PTO shaft and universals are moving freely and are well greased. Ensure all spring activated locking pins or collars on the Power Take Off (PTO) Shaft move freely, are well greased and can sit securely in the tractor PTO splined angular groove.
6) Ensure all shielding is in place and not damaged. If damaged order new shielding.

♦ Gearbox specifications and information regarding the quantity of oil required to fill them can be found on page 23 & 24 of this manual.

REPLACING PILOT & TEETH



Kanga Farm Equipment use Pengo cutting heads, pilots and teeth on all agricultural augers.

The pilot is replaceable and held in position with a high tensile bolt and nut. The bolt for a 6" Auger is $^{3}/_{16}$ x $1^{1}/_{4}$. For all other augers the bolt and nut required measures $^{3}/_{16}$ x $1^{1}/_{2}$.

The teeth are retained securely in position using the Pengo "Ribbed Rub'r-Lok" method.

Cut the rubber to the same width as the tooth. Before inserting the rubber moisten with water. Do not use oil.

Insert the cut moist piece of rubber through the horizontal hole in the web of the tooth holder.

Centralize the rubber in the holder and push the new tooth against the rubber to hold it in position.

Dive the tooth into place, using a "Soft" hammer or a piece of hardwood. D not use a standard hammer, axe or any other metal tools.

The rubber will fold back and compress between tooth and holder locking the tooth firmly into position.

TROUBLE SHOOTING

Problem	Possible Causes & Solution
Auger will not Dig	- Clutch Slipping – Adjust clutch. - Teeth dull – Sharpen or replace. - Ground too dry and hard – Apply water or wait for rain. - Auger turning too fast and bouncing – reduce speed. - Tall grass wrapping around auger – remove. - Auger encountering rock, root or other obstruction – lift auger and inspect.
Post Hole Digger sways side to side	- No sway bars or sway blocks on tractor – have fitted by a dealer. - Lift arms not adjusted evenly – adjust lift arms. - Excessive looseness in the 3-point linkage hitch – use proper size pins.
Bent auger flighting or bent auger	- Tractor moved while the auger was in a hole – always set tractors brakes and make sure the tractor is out of gear. - Operator moved tractor with the auger still in a hole to try and straighten the hole that was being dug on an angle. - Auger is encountering rocks, root or other obstruction – remove object from hole or change location.
Auger screwing itself into the ground	- Operator did not ease the auger into the ground using the 3-point linkage. - Faulty hydraulic 3-point linkage system on the tractor. - Tractor is too small to handle this digger.
Excessive vibration	- PTO Shaft universal cross is worn – replace
Auger digs only so far,	- PTO shaft "bottoms out" not allowing the digger to lower – check range of

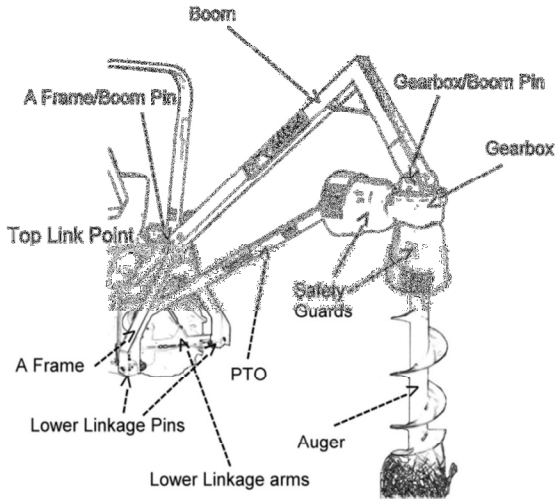
then will not dig deeper	movement. Remove auger from digger and lower the digger. If gearbox does not lower to the ground then PTO shaft make need to be shortened. - PTO Shaft interferes with drawbar – swing out of the way or remove. - Faulty hydraulic 3-point linkage system on the tractor – consult dealer. - Soil could have a hardpan layer 150 – 200mm below surface – consult dealer for alternative digging methods like hydraulic down pressure diggers.
PTO drive shaft failure	- Operator raising post hole digger too high when PTO is engaged – causes excessive PTO universal joint operating angle leading to a failure. - PTO is engaged while moving between holes. (Auger swings, which causes excessive PTO universal joint wear, which leads to a failure.) - PTO Shaft has not been properly lubricated. - Engaging tractor PTO with engine at high rpm. - Digging holes too deep to that PTO Shaft come in contact with the ground. - Operating at high rpm.
Gearbox failure	- No oil in gearbox. - Oil not changed per instructions. - Friction clutch was not correctly adjusted. - Bent output shaft is due to operator moving tractor while auger is in a hole.
Gearbox overheating	- Low on lubricant (oil) – fill to correct level. - Improper type of lubricant – replace with correct lubricant.
Tractor stalls	- Auger is encountering rock, roots or other foreign object – remove object or change hole location. - Tractor idle is not set correctly – tune tractor engine.

MINI / M / H RANGE ASSEMBLY INSTRUCTIONS

⚠ WARNING

- **Keep hands, feet, hair and clothing away from equipment while engine is running. Stay clear of all moving parts.**
- **During routine checks, repairs and when performing adjustments, keep all persons away from operators control area ensuring that no one can switch on the tractor or Implement. Keep the key to the tractor in your pocket.**
- **Make sure all spring activated locking pins or collars on the Power Take Off (PTO) Shaft move freely, are well greased and are firmly seated in the tractor PTO splined angular groove.**
- **When connecting the tractor to the implement always find somewhere level or flat.**
- **Always adjust the tractor lower linkage arms anti-sway devices to prevent implement from swing from side to side during transport and operation. Failure to do so may result in serious injury or damage. Damage like bent and twisted implement towers are consumable items and are <u>NOT</u> covered by warranty.**

Assembly of this implement is the responsibility of the KANGA FARM EQUIPMENT dealer. It should be delivered to the new owner completely assembled, lubricated and adjusted for normal conditions.
The digger is shipped partially assembled. Select a suitable working area where all parts can be laid out. Refer to accompanying text and part lists in this manual.



Attach "A" Frame to Boom

A tractor is required during assembly of a post hole digger. A tractor will make part of the fit up, alignment and handling easier.

1) Connect the diggers A Frame to the tractors Lower Linkage Arms with the Lower Linkage Pins supplied and secure with lynch pins.
2) Attach Boom to the top link point of the tractors 3-point linkage. Top link pin not supplied.
3) Align A Frame with the adjustment holes on the boom, start with middle hole, and secure into position with Pin.

⚠ CAUTION

With boom attached to tractor, raise boom by hand. Check clearance between boom and top of A Frame. If interference exists, change hole location. Now use the tractors 3-point lower linkage arms to check range of movement. Failure to check can result in damage to tractor or implement.

Attach Safety Covers

Place gearbox upside down on a suitable work surface and attach the black plastic guards to the housing of the gearbox on both the input and output shafts using the four cap screw and flat washers supplied.

Gearbox to Boom

1) Attach the desired auger to the output shaft of the gearbox and secure using the bolt and nut provided.
2) Stand gearbox and auger assembly on the auger point
3) Place gearbox and auger assembly under boom and slowly lower 3-point linkage arms of tractor.
4) Align gearbox mounting lug and boom. Secure together using pin and cotter pins provided.
5) Attach the PTO Shaft.

XH RANGE ASSEMBLY INSTRUCTIONS

⚠ WARNING

- **Keep hands, feet, hair and clothing away from equipment while engine is running. Stay clear of all moving parts.**
- **During routine checks, repairs and when performing adjustments, keep all persons away from operators control area ensuring that no one can switch on the tractor or Implement.**
- **Make sure all spring activated locking pins or collars on the Power Take Off (PTO) Shaft move freely, are well greased and are firmly seated in the tractor PTO splined angular groove.**
- **When connecting the tractor to the implement always find somewhere level or flat.**
- **Keep hands and body away from pressurized lines. Use paper or cardboard, not hands or other body parts to check for leaks. Wear safety goggles. Hydraulic fluid (oil) under pressure can easily penetrate the skin and will cause serious injury or death. CONTACT A PHYSICAN IMMEDIATELY IF FLUID ENTERS SKIN OR EYES. DO NOT DELAY.**
- **Make sure that all operating and service personnel know that if hydraulic fluid (oil) penetrates the skin, it must be surgically removed as soon as possible by a doctor familiar with this form of injury or gangrene, serious injury or death will result.**
- **Always adjust the tractor lower linkage arms anti-sway devices to prevent implement from swing from side to side during transport and operation. Failure to do so may result in serious injury or damage. Damage like bent and twisted implement towers are consumable items and are <u>NOT</u> covered by warranty.**

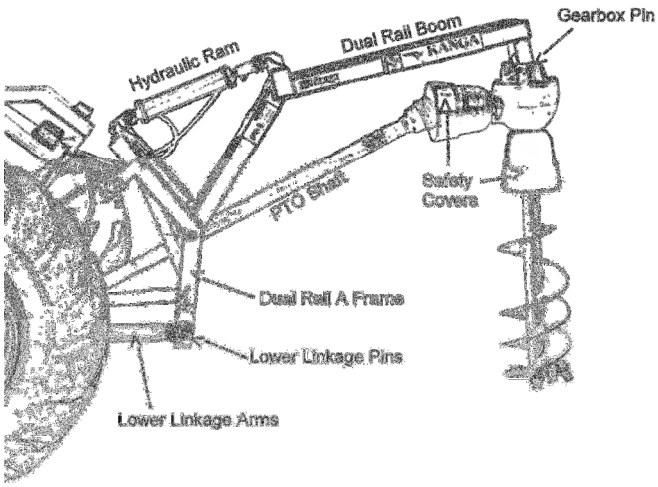
Assembly of this implement is the responsibility of the KANGA FARM EQUIPMENT dealer. It should be delivered to the new owner completely assembled, lubricated and adjusted for normal conditions.

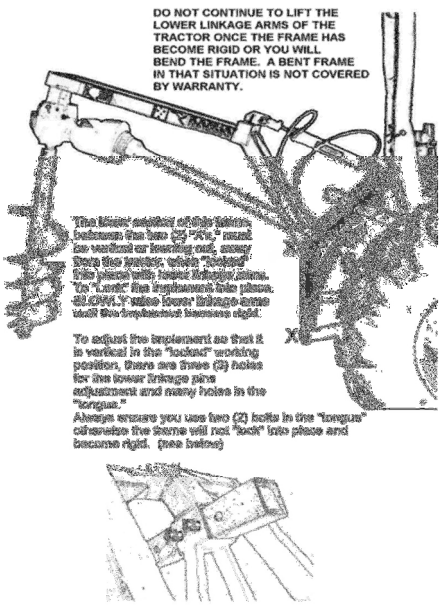
The digger is shipped partially assembled. Select a suitable working area where all parts can be laid out. Refer to accompanying text and part lists in this manual.

Attach "A" Frame to Boom

A tractor is required during assembly of a post hole digger. A tractor will make part of the fit up, alignment and handling easier.

1) Connect the diggers Dual Rail A Frame to the tractors Lower Linkage Arms with the Lower Linkage Pins supplied and secure with lynch pins then secure with the tongue to the top link point of the tractors 3-point linkage. Top link pin not supplied.
2) Attach Boom to the holes located near the bend in the A Frame and secure with bolts & nuts supplied.
3) Attach the Hydraulic Ram to the A Frame and secure with pins and clips supplied.
4) Lift Dual Rail Boom into a position where you can now attach the other end of the Hydraulic Ram to it. Again secure with pins and clips supplied.
5) Attach the Hydraulic Hoses. Always ensure hydraulic hoses are able to move within the range of the boom but are not hanging in a position where they can become tangled in moving parts. Return to your tractor seat and slowly lift the lower linkage until implement is rigid and "locked" into position. The implement will be "locked" into position once the tongue has taken some load. Do not lift too quickly or to high, as you will bend the tongue and the A Frame.




DO NOT CONTINUE TO LIFT THE LOWER LINKAGE ARMS OF THE TRACTOR ONCE THE FRAME HAS BECOME RIGID OR YOU WILL BEND THE FRAME. A BENT FRAME IN THAT SITUATION IS NOT COVERED BY WARRANTY.

⚠ CAUTION

Only raise the boom with the Hydraulic Ram once you have the A Frame in place. Operating the 3-point lower linkage arms of the tractor in conjunction with the Hydraulic Ram will cause you to bend the tongue of the A Frame. Always check the range of movement slowly.

Attach Safety Covers

Place gearbox upside down on a suitable work surface and attach the black plastic guards to the housing of the gearbox on both the input and output shafts using the four cap screw and flat washers supplied.

Gearbox to Boom

1) Attach the desired auger to the output shaft of the gearbox and secure using the bolt and nut provided.
2) Stand gearbox and auger assembly on the auger point
3) Place gearbox and auger assembly under boom and slowly lower the Hydraulic Ram with the tractors remotes.
4) Align gearbox mounting lug and boom. Secure together using pin and cotter pins provided.

Next attach the PTO Shaft.

The Power Take Off Shaft (PTO)

PTO shafts come in a standard length so that they can be adapted to all tractors. This means that you will have to check the range of movement and may have to shorten the PTO Shaft to suit your tractor.

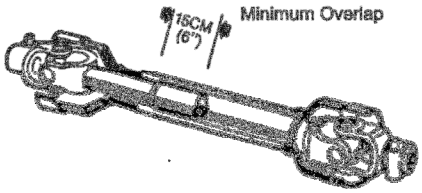
Checking the range of movement.

1) Remove auger from gearbox.
2) Attach PTO Shaft to the tractor and the implement.
3) Slowly raise and lower boom with the tractor 3-point linkage arms. Check PTO Shaft to see if at any stage it separates binds or bottoms out.

Note: Gearboxes should lower to the ground. If not, change the hole location between A Frame and Boom or see if PTO shaft is bottoming out. If Shaft is bottoming out, it will need to be shortened.

Shortening PTO Shaft (If required).

1) Remove PTO Shaft from gearbox and tractor.
2) Lower digger (with auger removed) until the input shaft of the gearbox is in line with the PTO output of the tractor. This is the shortest distance required for the PTO Shaft.
3) Pull PTO Shaft apart. Connect one half back to the gearbox and the other back to the PTO output of the tractor. Hold the two halves parallel to one another to determine how much the PTO Shaft must be shortened. Mark each end and check for a minimum 15cm overlap (figure 2). If there is less that the minimum overlap do not use. If there is more than 20cm the shaft will need to be shortened.
4) Raise Digger up into the transport position using the tractors 3-point linkage arms.
5) Hold the two halves parallel to one another and again check for suitable overlap. If the PTO shaft in this position has less than 15cm of overlap, do not use this shaft. Contact your dealer for a longer PTO Shaft.
6) Place half PTO Shaft in a vise and cut the external plastic guards first and then off the shaft itself. Always measure twice then cut once. Debur the end and clean away all chips with a file then re-grease the shaft.
7) Repeat process for other half of the PTO Shaft.
8) Apply multi-purpose grease to the outside of the male shaft and slide the two half back together.
9) Connect PTO shaft to gearbox and PTO output of the tractor.



Always check the plastic guarding on PTO shaft and the plastic clutch cover on the gearbox. If worn or damaged then replace immediately.

⚠ DANGER

- **To secure the PTO to the tractor you will see that there is a spring activated locking pin on both ends of the PTO Shaft. Push this pin in and slide the PTO onto either the tractor output shaft or the implement input shaft. Continue to slide the PTO onto the shaft until it becomes firmly seated in the angular groove. Always ensure that both ends are locked into the angular groove before engaging the PTO Shaft.**

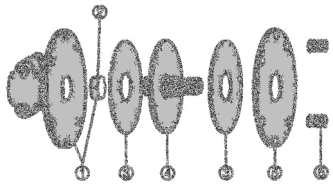
⚠ WARNING

- **Depending on the model of tractor that is being used with the implement it maybe possible to raise the implement to a point where the PTO fowls on the implement. This can bend your PTO shaft and may cause serious injury or damage. Before commencing operations remove auger and slowly raise the implement via the linkage to check the range of movement. Set a "STOP" on the tractors hydraulic lower linkage arms should the implement be capable of lifting too high so that the operator cannot go past this point. <u>Do not just commit it to memory.</u>**
- **Set friction clutch as outlined in this manual.**
- **Vibration tends to loosen bolts during operation. All hardware should be checked regularly. It is good practice to check implement before each operation to ensure all hardware is secure.**

The Clutch

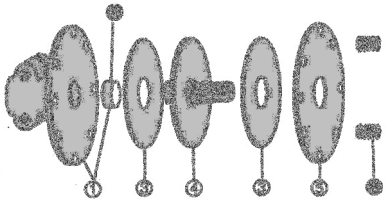
Gearbox protection is provided by a slip clutch with replaceable discs. The slip clutch is designed to slip and when excessive torsion loads are encountered.

Kanga 150mm (6") Two Plate Slip Clutch



1) 1 3/8" x 6 Spline base assembly (includes bush)
2) Bush 1 1/8" ID
3) Friction Disc 5" OD x 1 3/4" ID (2 required)
4) 1 3/8" x 6 Spline Drive Plate 5" OD x 1 1/8" Dia. Spigot
5) Pressure Plate
6) Spring (6 required)

Kanga 200mm (8") Two Plate Slip Clutch



1) 1 3/8" x 6 Spline base assembly (includes bush)
2) Bush 1 1/8" ID
3) Friction Disc 6 1/2" OD x 2 1/2" ID (2 required)
4) 1 3/8" x 6 Spline Drive Plate
5) Outer Pressure Plate
6) Spring (8 required)

Setting the Clutch

The slip clutch is designed to slip, protecting the gearbox, PTO shaft and tractor in the event of the implement striking an obstruction.

All new clutches supplied with Kanga Farm Equipment implements have been pre set by the following guide.

- Compress springs fully then back off two (2) turns.
- Fine tune so that the clutch slips occasionally.
- On 20 spline models, clutch retaining (clamp) bolts must be tightened to 150 ft/lbs to clamp clutch to shaft - LOOSE BOLTS = STRIPPED SPLINES.

NT: Discs are approximately 3.2mm thick when new. Replace discs after 1.6mm of wear. Minimum disc thickness is 1.6mm.

A new slip clutch, or one that has been in storage for some time, may be seized. Annually, release springs completely and allow clutch to slip to polish pressure plate. To do this you will have to carry out the following operations:

- Make sure tractor is turned off and key is removed.
- Remove PTO Shaft from the tractor.
- Loosen the bolts to remove all tension from the springs.
- Wedge the blade beam so that it cannot rotate.
- Grab PTO Shaft or clutch input shaft and turn to make sure clutch slips.
- If clutch does not slip freely, disassemble and clean the face of the clutch pressure plates and spline base assembly.
- Reassemble clutch.
- Tighten each bolt evenly until the springs are compressed, then back off all nuts two (2) full turns.
- If clutch continues to slip then tighten each bolt half a turn at a time until clutch is no longer slipping.
- If springs are compressed to 24mm, check friction discs for excessive wear. Discs are approximately 3.2mm thick when new. Replace discs after 1.6mm of wear. Minimum disc thickness is 1.6mm.

Every individual is operating in a slightly different environment with a range of variables that determine how the clutch must be set for their operation. The size of the tractor, the size of implement and the work being carried out and the terrain are all factors that determine the clutch setting. A quarter or half a turn can make a big difference. It is for this reason that each clutch should be reset for your operating conditions.

GEARBOX SERVICE

⚠ DANGER

The information in this manual requires special skills and tools. If you are not properly equipped or your mechanics are not properly trained in this type of repair, you may void your warranty or cause more damage leading to a larger repair bill.

⚠ WARNING

- **Before working underneath, read manual instructions, securely block up and check stability. Secure blocking prevents equipment dropping from hydraulic "creep" (i.e. slowly lowering), hydraulic system failure or mechanical component failure**
- **Keep all persons away from operator control area while performing adjustments, service or maintenance.**

⚠ CAUTION

- **Always wear relatively tight fitted clothing to avoid entanglement in moving parts. Wear heavy-duty, rough-soled boots and protective equipment for eyes, hair, hands, hearing and head.**

Gearbox Maintenance

Fill gearbox with high quality gear oil with a viscosity index of 90W. Fill gearbox until oil runs out the side plug on the gearbox. Gearbox Oil should be changed every 1000 hours of use or every two (2) years. Always drain oil into a container and dispose of it properly to protect the environment.

Oil level must be checked daily. The composition of oil deteriorates over time and the intense heat that occurs when operating a gearbox reduces the oil level. Low oil levels will result in wear of gearbox components that overtime will result in component failure that could have been prevented.

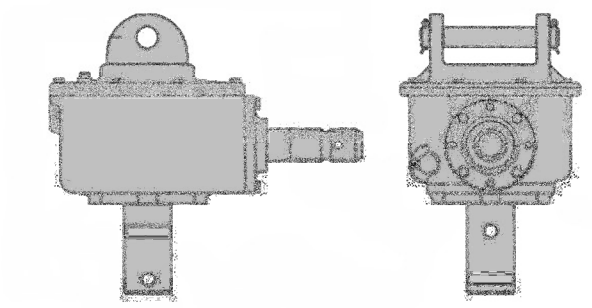
Repair to this gearbox should be limited to replacing bearings, seals and gaskets. Replacing gears, shafts and a housing is not cost effective. It is more economical to purchase a complete gearbox if repairs other than bearings, seals and gaskets are required. It is highly recommended that the customer be given the costs involved in both scenarios as a new gearbox comes with a new warranty (gearbox only).

Inspect gearbox for leakage and bad bearings. Leakage is a very serious problem and must be corrected immediately. Excessive noise and side to side or endplay in the shafts indicate bearing failure. Leakage can occur at the vertical or horizontal gasket and shaft seals. Leakage from the horizontal gasket or seal can be repaired without removing the gearbox from the slasher.

Proper seal installation is important. An improperly installed seal will leak. Always ensure the area where the seal outer diameter sits is clean. Always inspect the area of the shaft where the seal sits and remove any burrs or nicks with emery cloth. Always lubricate gear shaft and seal lips before assembling. Remove and replace any seals damaged during assembly.

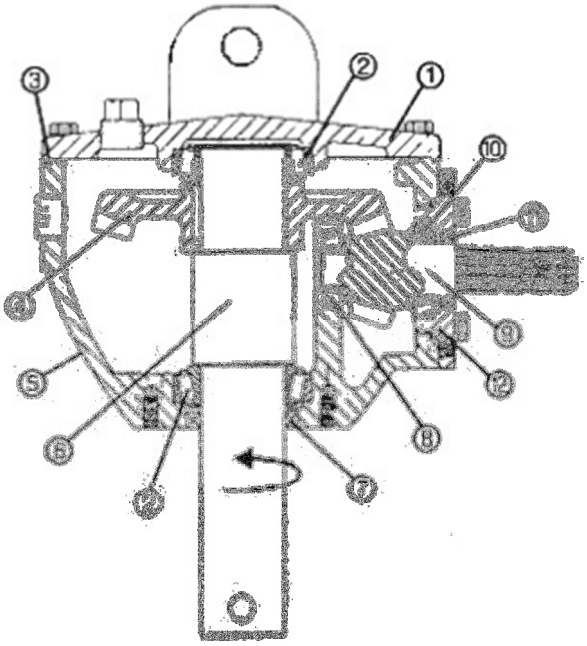
When assembling gearboxes always clean housing paying specific attention to areas where gaskets will be installed. Wash housing and all components thoroughly. Select a clean area where you can assemble the gearbox. Replace any damaged seals, bearings or gaskets. All parts must be clean and lightly oiled before reassembled.

35hp Gearbox

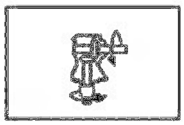


- Input Oil Seal
- Output Oil Seal
- Input Shaft Bearing
- Output Shaft Bearing (2 required)
- Weight: 22 kg
- Oil: Ep-90, 1L

50hp Gearbox

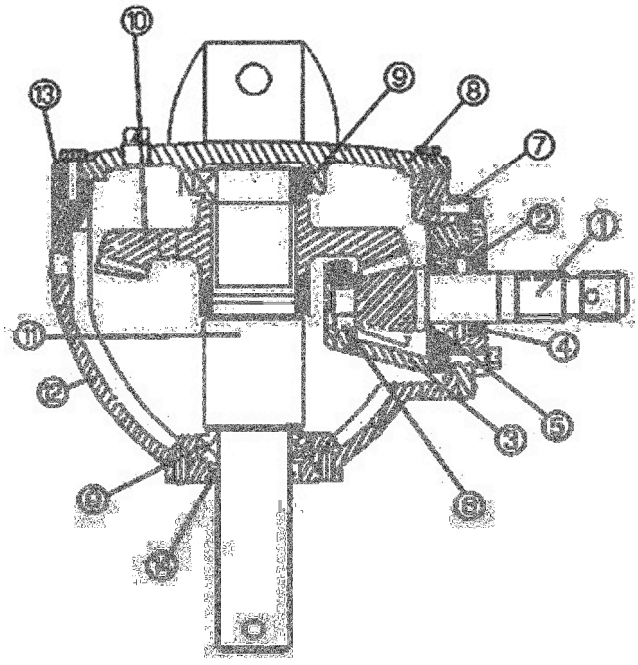


Housing: 60-40-10 Nodular
Shafts: UNS G10450
Gears: UNS G51200
Seals: Triple Lipped, Spring Loaded
Bearings: Tapered Roller
Oil: EP-90, 2L
Weight: 26.4 kg
Rotation:

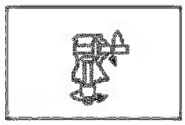


1) Top Housing
2) Cup & Cone (2 required)
3) Top Shim gasket (Qty as required)
4) Output Gear
5) Main Housing suit $1^{3}/_{8}$ x 6 Spline Input Shaft
6) Output Shaft
7) Lower Seal
8) Inner Pinion Cup & Cone
9) Pinion for models with $1^{3}/_{8}$ x 6 Spline Input Shaft
10) Outer Bearing Suit $1^{3}/_{8}$ x 6 Spline Input Shaft
11) Input Seal suit $1^{3}/_{8}$ x 6 Spline Input Shaft
12) Front Cap suit $1^{3}/_{8}$ x 6 Spline Input Shaft

50hp Gearbox



Housing: 60-40-10 Nodular
Shafts: UNS G10450
Gears: UNS G51200
Seals: Triple Lipped, Spring Loaded
Bearings: Tapered Roller
Oil: EP-90, 2.54L
Weight: 50.5 kg
Rotation:



1) Input Shaft
2) Outer Cap
3) Pinion Support Housing
4) Input Seal
5) Outer Pinion Cup & Cone
6) Inner Pinion Cup & Cone
7) Shim Gaskets
8) Top Cover
9) Cup & Cone Bearings (2 req.)
10) Output Gear
11) Output Shaft
12) Main Housing
13) Top Shim Gasket
14) Output Seal

Agricultural Machinery Product OHS Compliance Form

We, Gavhall Pty Ltd t/as Kanga Farm Equipment
Of, 16 Cahill Street
Dandenong, Victoria, Australia, 3175
Telephone: 03-9706-5166
Fax: 03-9706-5050

Confirm that the following machine(s)

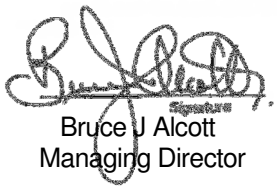
Kanga Mini Range Post Hole Digger(s)
Complete with 6", 9" or 12" Auger

Kanga H Range Post Hole Digger(s)
Complete with any auger from 6" – 24"

have had a hazard identification, risk assessment and risk control procedure carried out on a representative model of the aforementioned product(s) in accordance with the Occupational Health and Safety requirements of all states and territories of Australia and where found necessary the appropriate risk control measures have been incorporated in the product specifications.

The Operators Manual contains the necessary Health and Safety information and safety warnings decals are applied to the product where necessary.

Product Description: Post Hole Diggers
Model Number(s): XH Range – Product Code(s) 55000, 56000
H Range – Product Code(s) 50000
M Range – Product Code(s) 51000
Mini Range – Product Code(s) 52000
Auger(s) – Product Code(s) 50700, 50600, 50500, 50400, 50300, 50200, 50100



Name: Bruce J Alcott
Position Managing Director Date: 01 / 06 / 2005

Details of the unit assessed for the purpose of compliance

Model #	Auger Size	Serial #	Date of Inspection	Location
Mini Range	9"	050505	11 / 05 / 2005	16 Cahill St, Dandenong
M Range	15"	210408	09 / 04 / 2008	16 Cahill St, Dandenong
H Range	12"	930408	15 / 04 / 2008	16 Cahill St, Dandenong
XH Range (75hp)	15"	500504	03 / 05 / 2004	16 Cahill St, Dandenong

PRE-DELIVERY CHECKLIST
(Dealers Responsibility)

Inspect implement thoroughly after assembly to be certain it is set up properly before delivering it to the customer. The following checklist is a reminder of points to inspect. Check off each item as it is found satisfactory either before or after corrections or services performed.

- □ Check all bolts and ensure that they are tight.
- □ Check all cotter pins and linkage pins and ensure they are properly installed and can be secured.
- □ Refer to lubrication instructions and lubricate implement.
- □ Explain the importance of lubrication to the customer and point out all the lubrication points on the implement.
- □ Check that any "wear points" (i.e. points, blades, edges, tines) have been properly installed.
- □ Show customer how to make adjustments. Describe the options available for the implement and explain there purpose and how they work.
- □ Ensure the stability of the tractor has not been compromised with the implement the customer has purchased. Remember a minimum 20% of tractor and equipment gross weight must be on the tractor's front wheels with implement in the transport position. If you are adding weight to the tractor to attain the 20%, you must not exceed the ROPS max ballasted mass certificate. Weight the tractor and implement. Do not estimate.
- □ Give Operators Manual to the customer and recommend that customer become familiar with all sections, especially the safety and safe operating procedures.
- □ Explain to the customer that when transporting the implement on roads or highways, day or night, safety devices should be used to provide adequate warning to operators of other vehicles. Also explain the operator must ensure that the tractor and implement complies with current State and Federal laws and must strictly adhere to all road traffic regulations in force in his/her particular state.
- □ Check PTO series is correct and that the PTO is the correct length **(post hole diggers only)**
- □ Check gearbox is properly serviced and seals are in good condition and not leaking. **(post hole diggers only)**

⚠ IMPORTANT

Gearbox was not filled with oil at the factory. It must be serviced before implement is operated. Failure to service will result in damage to the gearbox. You will find a level plug on the side of your gearbox or a guide to the amount of oil required can be found on the same page as the gearbox parts guide.

- □ Ensure the customer has signed the **WARRANTY REGISTRATION & INSTALLATION FORM** and a copy has been returned to Kanga Farm Equipment, 16 Cahill Street, Dandenong, Victoria, 3175.

Name of person who carried out Pre-delivery: _____ **Signature:** _____

Dealership Name: _____ **Location carried out:** _____

Date: __/__/____

Top copy (manufacture') **Middle Copy (dealer')** **Last page (purchaser')**

WARRANTY REGISTRATION & INSTALLATION FORM

Owners Name: _

Town: _ **State:** _ _ _ _ _ _ _ _ _ _ _ _ **P/Code:** _ _ _ _

Type of Implement Purchased

□ **Post Hole Digger** □ Mini Range □ M Range □ H Range □ XH Range (50hp) □ XH Range (75hp)

□ **Box Scrapper** □ 1200mm □ 1800mm □ 2400mm

□ **Carryall** □ 4' x 3' □ 5' x 3'6" □ 6' x 3'6"

□ **Cultivator** □ Eurotiller (5 / 7 / 9 / 11 Tine) □ S Tine (2.4m / 2.8m / 3.0m / 3.2m) □ Chisel Plough (5 / 7 / 9 / 11 Tine)

□ **Pallet Fork** □ 500kg □ 1000kg

□ **Bale Equip.** □ Spike □ Silage Fork □ Adj. Bale Feed Out Fork

□ **Ripper** □ H Range 3 Tine □ M Range 3 Tine □ H Range Single Tine □ M Range Single Tine □ Mini Single Tine

□ **Stick Rake** □ 1800mm □ 2400mm □ 3000mm

□ **Harrows** □ 2400mm □ 3000mm □ 3600mm □ 4000mm (Harrow Rake)

□ **Other** (Please Specify) _____

Serial Number _____

Month of Manufactured: □ Jan □ Feb □ Mar □ Apr □ May □ Jun □ Jul □ Aug □ Sept □ Oct □ Nov □ Dec

Year of Manufacture _ _ _ _ **Date of Purchased** _ _ / _ _ / _ _ _ _

Intended areas of use: □ Paddocks Only □ Close to Sheds & Buildings □ Near Roads

□ **Contracting**, please specify: _

□ **Other**, please specify: _

I have been fully instructed in the operation of this unit in the actual working conditions that I intended to operate and I am satisfied that I can use it safely. I acknowledge that I have been fully instructed in the care, maintenance, lubrication and that Kanga Implements have been designed for agricultural use in area away from people, animals, roads and property. I understand that there are Federal and State Laws as well as OH&S Standards that dictate how I can operate should I wish to operate along roads or in any populated areas and that it is my responsibility to know and adhere to those laws. I have received a copy of the operating manual and the dealer has instructed me to read the manual in full before commencing any operations.

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